CLAIMS

1. A device for opening and closing injection nozzles in an injection moulding tool, wherein the injection nozzle comprises a nozzle member, the nozzle opening of which can be opened and closed with a needle, wherein the needle is stationarily arranged on a piston plate that is supported in a receptacle such that it can be moved in both axial directions similar to a double-action cylinder, wherein a first work chamber is formed on the side of the piston plate which faces away from the needle and a second work chamber that can be acted upon with a fluid in order to actuate the needle is formed on the opposite side of the piston plate, and wherein the needle extends outward from the second work chamber through a recess in an end element that lies opposite of the piston plate,

characterized in that

the second work chamber (19) is sealed in an essentially fluid-tight fashion by means of a first sealing element (22, 37) that is arranged between the inner wall of the receptacle (12) and the piston plate (17; 34, 35) and a second sealing element (32) that is arranged between the wall of the recess (31) and the needle (25) and comes in direct contact with the needle (25).

2. The device according to Claim 1,

characterized in that

it comprises a base plate (13), an end plate (15) and a cylinder plate (11) that is arranged between the base plate (13) and the end plate (15), wherein the

receptacle for the piston plate (17; 34, 35) is arranged in the cylinder plate (11), wherein the base plate (13) seals the receptacle (12) and forms the first work chamber (18), and wherein the end plate (15) seals the receptacle (12) and forms the second work chamber (19).

3. The device according to Claim 2,

characterized in that

an essentially closed peripheral sealing element (22, 37) is arranged around the receptacle (12) between the base plate (13) and the cylinder plate (11).

4. The device according to Claim 2 or 3,

characterized in that

the base plate (13) contains a line (23) that serves for the inflow and the outflow of the fluid and ends in the receptacle (12).

5. The device according to one of Claims 2-4,

characterized in that

an essentially closed peripheral sealing element (32) is arranged around the receptacle (12) between the cylinder plate (11) and the end plate (15).

6. The device according to one of Claims 2-5,

characterized in that

the end plate (15) contains a line (24) that serves for the inflow and the outflow of the fluid and ends in the receptacle (12).

7. The device according to one of Claims 1-6,

characterized in that

the piston plate (17; 34, 35) essentially has the shape of a circular disk, and in that the recess (12) is realized complementary thereto in the form of a regular cylinder.

8. The device according to one of Claims 1-7,

characterized in that

the piston plate (17; 34, 35) is provided with an essentially closed peripheral recess (21) in the region of its outer circumferential surface, wherein the first sealing element (22, 37) is arranged in this recess.

9. The device according to one of Claims 1-8,

characterized in that

the first sealing element (22, 37) is realized in the form of an O-ring or an annular lip seal.

10. The device according to one of Claims 1-9,

characterized in that

the second sealing element (32) is realized in the form of an O-ring or an annular lip seal.

11. The device according to one of Claims 1-10,

characterized in that

a guide element (38) for guiding the needle (25) is arranged in the recess (31) of the end element or the end plate (15) in addition to the second sealing element (32).

12. The device according to Claim 11,

characterized in that

the guide element (38) is realized in the form of, in particular, a bushing-shaped radial sliding bearing.

13. The device according to one of Claims 1-12,

characterized in that

a fixing element (33) is provided for fixing the second sealing element (32) and/or the guide element (38), in particular, under a prestress.

14. The device according to Claim 13,

characterized in that

the fixing element (33) can be screwed into the recess (31) similar to a stud screw and contains an axially continuous recess, through which the needle (25) extends with at least slight radial play.

15. The device according to one of Claims 1-14,

characterized in that

at least two needles (25) are arranged on a piston plate (17; 34, 35).